

CASE STUDY

# Ontario Realty Corporation Ministry of the Environment

81A, 101 & 125 Resources Rd, Toronto, Ontario

July 2010



#### CASE STUDY Ministry of the Environment

# Background

The Ontario Ministry of the Environment (MOE) occupies a multi-building campus located in Toronto, Ontario. The campus is managed by the Ontario Realty Corporation (ORC), the real estate service provider to all provincial ministries. The ORC selected Fifth Light's Enterprise Solution to provide consolidated web based dimming control over three buildings in the MOE campus, 81A, 101 and 125 Resources Rd.

### **Project Objectives**

The Fifth Light Solution was designed to meet several key project objectives, as listed below:

- Provide maximum energy savings while maintaining task-appropriate light levels at desk height
- Unify control and management of the lighting systems in each building to a single website
- Utilize open protocols for all digital communication to lighting equipment
- Publish energy savings results online and automatically email reports to portfolio managers on a regular basis
- Link the unified campus lighting system to other ORC properties



#### Project Highlights

Lighting energy consumption reduced by 79%

Annual greenhouse gas reduction of

1,556 tonnes

10 year life cycle cost savings of \$900,000

Lighting and energy management as a

Consolidated Portfolio



# Solution Overview

To meet these challenges, Fifth Light's Enterprise Lighting Solution was chosen. This Solution consists of the following components:

- 4,775 DALI dimmable 2 lamp 32WT8 ballasts (240V)
- 200 DALI relays (347V/20A)
- 50 low voltage momentary switches
- 823 low voltage occupancy sensors
- 120 low voltage daylight sensors
- 19 Lighting Control Panels
- 1 multi-user web based Lighting Management Software application



The key lighting management features provided in this project include:

1 Daylight Harvesting with gradient dimming. A network of daylight sensors adjust lighting levels in response to ambient lighting conditions. A gradient dimming algorithm allows for a single daylight sensor to dim the first row of light fixtures closest to the window more than the second row, which is dimmed more than the third row.

2 Occupancy Detection with device specific profiles. Each occupancy sensor is assigned a set of fixtures and a response pattern through software. Virtual lighting zones allow for the set of fixtures controlled by a given momentary switch to be modified at anytime without rewiring. Dynamic time limits, virtual minimum and maximum levels allow the facility manager to customize the behavior of each occupancy sensor.

**3** Automatic Tube Fault Detection and Dispatch. The operational status of each DALI ballast and lamp is automatically checked every 2 minutes. An electronic notification that illustrates the location of the fixture to be serviced is emailed to the facility management team.

**4** Web based control. The facility team is given password protected access through an internet browser. Internet Explorer, Safari, Firefox and Chrome are supported by the Lighting Management Software.

**5** Consolidated Portfolio. The system allows the facility team to access the lighting system of any building from a single website. This website also allows portfolio and sustainability managers to chart and analyze the energy consumption on per campus, building, floor and user defined zone basis. Energy savings reports are emailed regularly to the facility team.

#### Results

The results of this project have been determined by the Fifth Light Reporting Software. The reference data for the preinstallation system was provided by the facility management team.

- Floor light level: 35-40 foot candles
- Light power density: 0.8 W/sq ft
- Energy savings: 79%
- 10 year life cycle savings: \$0.9 million
- Greenhouse gas reduction: 1,556 tonnes CO<sub>2</sub> eq/year <sup>1</sup>

This case study is based on data produced upon completion of the installation.

<sup>1</sup> Canadian Energy Research Institute, *Comparative Life Cycle Assessment of Base Load Electricity Generation in Ontario*, October 2008.

